REMARKS

Claim 1 is the only claim pending in this application.

Claim 1 stands rejected under 35 U.S.C. § 102(b) as anticipated by United States Patent 5,657,394 to Schwartz et al. (Schwartz). Applicant respectfully traverses the prior art rejection, and requests reconsideration and allowance of the pending claim in view of the following remarks.

Aspects of the present invention relate generally to semiconductor testing equipment, and more specifically, to methods of analyzing scrub marks. Specifically, claim 1 recites a workstation comprising both "a probe card analyzer" and a "scrub mark analyzer." At page 3, lines 15-23, the present application explains an important distinction: "[i]t is well known that ***scrub patterns analyzed by a probe card analysis (hereinafter "PCA") machine do not match the scrub marks produced on a test wafer imaged by a scrub mark analysis (hereinafter "SMA") machine***. The test wafer models the surface characteristics of bonding pads on a semiconductor die . . . the measurement surface on the probe card analyzer is typically manufactured from hardened steel, or more recently a transparent synthetic or natural crystal such as sapphire. This ***PCA testing surface is much harder than the aluminized surface of a semiconductor bonding pad***. The typical annealed aluminum surface of a semiconductor bonding pad in fact yields under pressures applied by the semiconductor probing machine" (emphasis supplied; reference numerals omitted).

A PCA machine may be employed to *predict scrub marks* that will be produced on wafer bonding pad. In accordance with the present application, the *actual scrub marks* produced on the bonding pads may be measured by a system employing an SMA. Accordingly, an analysis may employ scrub mark data (*i.e.*, from the SMA machine), facilitating identification of probing process errors. Further, the system described and claimed may also use scrub mark (SMA) in conjunction with PCA data to analyze the errors associated with the prediction as determined by the PCA.

Claim 1 is particularly directed to a workstation incorporating both a PCA machine and an SMA machine. Specifically, elements are recited which are directed to both "*first scrub marks* made by probe card pins on a check plate *in said probe card analyzer*" as well as "*second scrub marks* made by said probe card pins on bonding pads *in said scrub mark analyzer*."

The Rejection Under 35 U.S.C. § 102(b)

As noted above, claim 1 stands rejected under 35 U.S.C. § 102(b) as anticipated by Schwartz. In order to anticipate a pending claim under any of the various subsections of 35 U.S.C. § 102, a cited reference must teach every element recited in the claim. As set forth in more detail below, the Schwartz patent fails to teach or even to suggest every element recited in claim 1; accordingly, the rejection under 35 U.S.C. § 102(b) is improper and should be withdrawn.

The Schwartz patent is directed particularly and exclusively to PCA technology. As noted briefly above, a PCA apparatus may have utility in generally *predicting* the scrub marks that may be produced on a wafer bonding pad. Specifically, the system described in Schwartz allows for a wafer to be loaded; the system merely "[o]bserve[s] the scrub marks formed" in the context of a PCA apparatus (column 12, lines 56 - 64 of Schwartz). While arguably contemplating a "relatively soft pad metalization," the Schwartz patent neither teaches nor fairly suggests ***measuring scrub marks actually made on a wafer***. This deficiency is not surprising, since the Schwartz patent neither teaches nor suggest using both a PCA machine and an SMA machine.

In that regard, the PCA system described in the Schwartz patent employs a "viewing system" to measure a location of a probe tip at two positions; the viewing system is operative to observe these relative probe tip locations through a window (*see, e.g.*, claim 1 and the paragraph bridging columns 8 and 9 of the Schwartz patent). A computer employs these position data to compute an "equivalent of a scrub mark 173 which would be made by the probe tip 90 on the relatively soft metal" of a bonding pad (column 15, line 16, of Schwartz). Specifically, the system described in Schwartz is configured and operative, at best, to predict with some uncertainty a scrub mark that will be produced.

Additionally, the Schwartz system uses a mathematical (*i.e.*, modeled) set of pads, not the actual pads (*see, e.g.*, claim 1 of Schwartz, reciting "a predefined set of pad *locations representative of locations of integrated circuit pads*"). Again, this deficiency is not surprising, since the Schwartz system does not employ an SMA and does not contemplate "second scrub marks made by said probe card pins on bonding pads in said scrub mark analyzer" as recited with particularity in claim 1.

The Schwartz patent fails to teach or to suggest every element recited in pending claim 1. For example, the Schwartz patent neither teaches nor fairly suggests a system which

obtains and analyzes scrub mark pattern data both from a probe card analyzer and a scrub mark analyzer as set forth in the present application and as recited in claim 1. In fact, the Schwartz system is designed specifically to predict scrub mark patterns without actually making any scrub marks at all (col. 5, ll. 54-65).

At least for the reasons set forth above, Applicant submits that the Schwartz patent is more deficient than the Examiner has acknowledged, and that claim 1 is allowable. Applicant requests that the rejection under 35 U.S.C. § 102(b) be withdrawn.

CONCLUSION

Based at least upon the foregoing, Applicant submits that the present application is currently in condition for allowance. Early, favorable action on the merits is solicited. The Examiner is invited to telephone the undersigned if it is believed that a discussion will expedite prosecution of this application.

Please charge any fees associated with the submission of this paper to Deposit Account Number 502212. The Commissioner for Patents is also authorized to credit any over payments to the above-referenced Deposit Account.

Respectfully submitted,

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